

AFRP- Annual Workplan 2000

Initial Scope of Work for:

River corridor physical habitat assessment and restoration plan for the Stanislaus River

PROPOSED AFRP CONTRIBUTION: \$ 200,000

A Scope of Work Submitted by:

The Anadromous Fish Restoration Program and the Stanislaus Fisheries Technical Group

I SCOPE OF THE PROJECT

Project description. The Stanislaus River Corridor Physical Habitat Assessment and Restoration Plan will provide an implementation strategy for the restoration of physical habitat and river corridor processes necessary to help increase and sustain anadromous fish production in the Stanislaus River. This restoration strategy will be based on an assessment of current and historic river corridor habitats and processes, hydrology and fisheries information. This information will be used to help interpret past trends in salmon production and identify factors responsible for their decline. Based on this assessment a river corridor restoration strategy that considers contemporary constraints and challenges will be developed. This plan will help resource managers and restoration program coordinators to prioritize and implement actions that are most likely to benefit anadromous fish production within the lower Stanislaus River. The ultimate goal will be an integrated, long-term restoration plan for the lower Stanislaus River that will maximize anadromous fish habitat improvement, minimize channel restoration project cost, and streamline project evaluation and monitoring. The planning effort will also consider current and future land use considerations and engage the local community to develop specific projects that are implementable in the current social context.

The planning effort will focus on chinook salmon and steelhead, with secondary emphasis on other anadromous fish species. Primary ecosystem elements to be considered in developing a habitat restoration strategy include: historic and current hydrology, including current and proposed instream flows; river temperatures and potential management alternatives; historic and current geomorphic processes that include coarse sediment supply, stream meander and channel forming and riparian regeneration processes; and riverine aquatic habitats, particularly those important to chinook salmon and steelhead spawning and rearing.

Project location. The plan will provide an assessment of the river corridor throughout the lower 56 miles of river from Goodwin Dam down to the confluence with the San Joaquin River. Key areas of focus will include the upper Goodwin Canyon (RM 56 to 52), the primary spawning and gravel-bedded reach from Knights Ferry down to Riverbank (RM 52 to 34) and the lower sand-bedded reach. Other areas of specific focus could include the Corps of Engineers Stanislaus River Parks, a series of developed and undeveloped parcels of land within the 8,000 cfs floodway and the San Joaquin National Wildlife Refuge at the confluence, both offering unique restoration opportunities.

The primary biological/ecological objectives: The proposed project will guide refinement, evaluation, prioritization, implementation, monitoring, and revision of fishery restoration actions and studies proposed in various planning documents including the Revised Draft Restoration Plan for the AFRP, CALFED's ERP, Comprehensive Monitoring and Assessment Program and the Stanislaus River- specific adaptive management plan. Subsequent implementation of prioritized actions and studies will protect, enhance and restore Stanislaus River habitats, the key processes that create and maintain these habitats, and the anadromous fish species that use these habitats (particularly fall run chinook salmon and steelhead), while increasing our understanding of ecosystem structure and function.

A long-term restoration strategy and implementation will directly benefit instream aquatic habitat, shaded riparian habitat, seasonally inundated floodplain habitat, and riparian habitat as well as enhance physical and biological interactions between these habitat, and benefit San Joaquin fall-run chinook salmon, migratory birds, and numerous other native species.

Project approach and tasks: The Stanislaus River Fisheries Technical Workgroup is the primary coordinating fisheries group for the Stanislaus River and will be responsible for working with the contractor to define and finalize project tasks. The project currently is conceived as 4 primary tasks.

- **Task 1:** A scoping summary of the system to identify the most important biological and geomorphic processes and issues, allowing a more focused approach to developing a restoration strategy and approach:
 - Assess historic and contemporary geomorphic and hydrologic processes most important to river ecosystem restoration in the lower mainstem Stanislaus River;
 - Stage limited field reconnaissance to assess tributary and agricultural runoff inputs of fine sediment into the mainstem Stanislaus River and identify mainstem reaches potentially restricting bedload transport and other community process;
 - Review recent biological studies and hydrological data to evaluate factors that potentially limit salmonid production and watershed productivity which includes riparian and floodplain development and maintenance.

Deliverable- Scoping summary report

Estimated Cost- **\$20,000**

- **Task 2:** Synthesize all of the available and pertinent information on fisheries related issues on the Stanislaus with survey information from task one to produce a draft a physical habitat conceptual framework that can be a starting point for evaluating the importance and need of potential restoration actions.

Deliverable- Physical habitat conceptual framework. This should identify the key factors that potentially regulate salmon production in the Stanislaus River, and highlight the key questions and hypotheses that can be used to guide restoration and evaluation activities and which can be built upon as our understanding of the system increases.

Estimated Cost- **\$10,000**

- **Task 3** Prepare detailed watershed analysis that is informed by the above two tasks:
 - A. Preservation and restoration site inventory (estimated cost **\$65,000**)
 - B. Evaluate mainstem fluvial geomorphic process (estimated cost **\$40,000**)
 - C. Evaluate geomorphic-salmonid relationships (estimated cost **\$20,000**)
 - D. Finalize restoration site list and preliminary project design (estimated cost **\$80,000**)
 - E. Develop a concept restoration document and conduct a series public outreach workshops (estimated cost **\$25,000**)

- **Task 4:** Finalize Restoration Plan based on technical review and input from the public outreach workshops (estimated cost **\$20,000**).

Participants and collaborators: This initial Scope of Work was prepared by the AFRP. Discussion with Oakdale Irrigation District (OID) and the Bureau of Reclamation (BOR) to explore funding partnerships has been initiated and will continue in order to solidify partnerships and identify potential funding contributions.

The action will be further developed through coordination with the Stanislaus River Fish Technical Group. This group currently has technical representation from the Service, OID, California Department of Fish and Game, US Bureau of Reclamation, National Marine Fisheries Service, and the US Army Corps of Engineers; Stockton East Water District participates infrequently.

Coordination with the ongoing activities of the Stanislaus Basin Stakeholders (SBS) will be essential to this restoration planning effort. The SBS has been primarily focused on two key activities that need to be linked with this river corridor restoration planning effort and these are: 1) to develop a long-term water management and operations plan for the Stanislaus, and 2) to develop a water temperature model that will help guide operations of the system and better inform the long-term water management planning effort.

Local support and involvement: Another proposed FY 2000 action by the AFRP is to initiate a broader stakeholder outreach process that will engage local interests, communities and individuals along the lower Stanislaus River corridor. The intent is to engage the public in restoration planning to more fully develop partnerships and the support that will be needed to implement a river corridor restoration strategy.

Funding: Total Project cost is estimated to be about **\$210,000** based on a similar effort on the Tuolumne River. The AFRP is proposes to fund half of this effort and to secure cost share contributions from others with a management interest on the river.

II JUSTIFICATION FOR THE PROJECT

Fisheries management and restoration planning activities have just recently started in a more formal and focused context. The Stanislaus Fisheries Technical Group (SFTG) has taken the lead on attempting to coordinate fisheries management activities and issues, and to disseminate information and action from the group. The SFTG communicates and coordinates with the Stanislaus Basin Stakeholders (SBS)- a group primarily involved in water management operations and coordination, and which ultimately intends to develop a long-term water management plan for the Stanislaus River. To some extent, the water management planning effort has been an all-consuming effort with little attention given to other restoration and management activities. Through developing a river corridor restoration evaluation and planning document the SFTG hopes to provide information that can be used to guide restoration efforts that are consistent with the water management planning activities in the SBS forum yet not contingent upon one specific outcome.

Like other San Joaquin River tributaries, the Stanislaus River and its surrounding habitat has experienced significant alteration of its sediment supply, flow regime, and morphology, which have resulted in the loss and degradation of habitat for native species particularly chinook salmon and steelhead trout. Dams and diversions, changes in the hydrograph and reduced hydrologic variability, loss of coarse sediment recruitment, separation of the river from its floodplain, riparian vegetation alterations and off-channel mining have cumulatively led to reduced productivity of the Stanislaus River and numbers of salmon that the system can sustain.

Fish Restoration Plans such as the State's Plan For Action, the Revised Draft Restoration Plan for the AFRP, and CALFED's ERP all identify restoration actions at varying levels of specificity. Some of the actions contained in these plans have been implemented or are currently underway and will help to better inform future restoration actions. However, these plans are inherently general because of the lack of specific system-wide information on river-wide processes and connection to anadromous fish production. These plans also identify the need to better understand the factors that regulate salmonid productivity and capability of alluvial systems. This is the case on the Stanislaus River. This assessment and planning effort will help progress toward a more integrated approach of looking at how processes that regulate river productivity and salmon production have been changed. The Stanislaus River Corridor Physical Habitat Assessment and Restoration Plan will help identify historic changes to the river corridor habitat and processes. It will integrate this information with current opportunities and constraints, and then identify habitat restoration actions that will have the greatest likelihood of improving the conditions and processes needed to improve and sustain anadromous salmonid production. Based on a comprehensive understanding of ecological, biological and geomorphic conditions and processes, the proposed project will develop a plan to restore (where possible) disturbed riverine habitats and to re-establish the fluvial processes necessary for maintaining the system in the long term. This approach recognizes the dynamic nature of the fluvial system as well as the physical and biological connectivity among channel, floodplain and riparian habitats.

Restoration planning efforts will target fall run chinook salmon and steelhead. Stanislaus River fall run chinook salmon escapement has averaged around 5,000 fish from 1967 to 1991. Escapements in the early 90's during the drought dropped to below 1,000 fish in some years with numbers starting to increase after a series of wet years in the mid to late 1990s. Central Valley fall-run chinook salmon are proposed for listing under the Endangered Species Act (ESA) with a decision expected later this year from the National Marine Fisheries Service. Steelhead are currently protected under the ESA and the Stanislaus River is proposed as critical habitat. The Stanislaus River has also been the most consistent producer of the anadromous steelhead form of the three San Joaquin River tributaries.

Compatibility with AFRP and CALFED restoration objectives: This project supports Stanislaus River Action 2 "Improve watershed management and restore and protect instream and riparian habitat, including consideration of restoring and replenishing spawning gravel and performing an integrated evaluation of biological and geomorphic processes" in the Revised Draft Restoration Plan for the AFRP.

III MONITORING AND DATA EVALUATION

This project will help to further develop a conceptual framework that will provide the foundation for active adaptive management. This will identify the most important system-wide monitoring components that need to be instituted to evaluate improvements in river corridor process, function and condition.

IV WORK TO BE PERFORMED AND DELIVERABLES

- **Task 1:** A scoping summary of the system to identify the most important biological and geomorphic processes and issues, allowing a more focused approach to developing a restoration strategy and approach:
 - Assess historic and contemporary geomorphic and hydrologic processes most important to river ecosystem restoration in the lower mainstem Stanislaus River;
 - Stage limited field reconnaissance to assess tributary and agricultural runoff inputs of fine sediment into the mainstem Stanislaus River and identify mainstem reaches potentially restricting bedload transport and other community process;
 - Review recent biological studies and hydrological data to evaluate factors potentially limiting salmonid productivity and riparian and floodplain development and maintenance.

Deliverable- Scoping summary report

Estimated Cost~ **\$20,000**

- **Task 2:** Synthesize all of the available and pertinent information on fisheries related issues on the Stanislaus with survey information from task one to produce a draft a physical habitat conceptual framework that can be a starting point for evaluating the importance and need of potential restoration actions.

Deliverable- Physical habitat conceptual framework. This should identify the key factors that potentially regulate salmon production in the Stanislaus River, and highlight the key questions and hypotheses that can be used to guide restoration and evaluation activities and which can be built upon as our understanding of the system increases.

Estimated Cost~ **\$10,000**

- **Task 3** Prepare detailed watershed analysis and draft plan that is informed by the above two tasks:

A. Preservation and restoration site inventory (estimated cost~ \$65,000)

Inventory, classify, and map existing riparian habitat in the lower Stanislaus River corridor. Assess uniqueness, ecological significance and restoration potential. Identify and prioritize riparian preservation and restoration sites

- Broad classification of restoration sites,
- Field trip with concerned parties to include all classification perspectives before doing the inventory,
- Field trip for descriptive habitat classification and preliminary mapping,

- Inventory restoration attributes on aerial photos
- Prepare preliminary priority list

B. Evaluate mainstem fluvial geomorphic process (estimated cost ~ **\$40,000**)

Develop sediment transport model for mainstem.

- Estimate volume and particle size composition of any tributary inputs.
- Estimate coarse bedload input from channelbank scour.
- Bed mobility measurements and bedload monitoring results. Model mainstem to identify channelbed thresholds and identify mainstem channel reaches that prevent, or severely impede, coarse bedload transport throughout the mainstem.
- Identify opportunities for achieving fluvial geomorphic thresholds using flow release prescriptions (e.g., using spring pulse flows and flood control releases during wet years).

C. Evaluate geomorphic-salmonid relationships (estimated cost ~ **\$20,000**)

Document and evaluate past and present relationships between geomorphic processes and salmonid life history and habitat requirements, identify how changes in these processes have limited salmonid productivity, and integrate into overall restoration strategy. Includes:

- Hydrologic evaluation (pre and post major dams) and includes flood frequency analysis, flow duration and timing analysis, and annual hydrographs;
- Geomorphic evaluation including hydraulic evaluation and document changes in planform morphology from air photos and maps, changes in stream channel morphology as a function of changing physical processes (hydraulic geometry, old cross sections, air photos, maps, and anecdotal information)
- Summarize salmonid life history as it depended on pre-European hydrology and geomorphology

D. Finalize restoration site list and preliminary project designs (estimated cost ~ **\$80,000**)

- Develop a Stanislaus River restoration strategy, prioritizing approaches and sites with the best potential for restoring and protecting critical components of the Stanislaus River ecosystem and reduce limiting factors for salmonids;
- Develop costs, expected benefits, and permitting issues associated with each restoration strategy to allow comparison of recommended restoration strategies;
- Develop site-specific project designs for the top ten prioritized sites of sufficient detail to be used as funding proposals and rough cost estimates (propose list to fish group);
- Prepare channel dimensions and riparian planting guidelines for all sites in general, and conceptual designs prepared for the ten priority sites
- Recommend a monitoring philosophy and specific methodologies for determining how the implemented plan is accomplishing river ecosystem restoration and improving salmonid habitat.

E. Develop a concept restoration document and conduct a series public outreach workshops (estimated cost ~ **\$25,000**)

- **Task 4:** Finalize Restoration Plan based on technical review and input from the public outreach workshops (estimated cost ~ **\$20,000**).

Includes production of hard copies and CD ROM.

V BUDGET

The total cost for this project is only roughly estimated at this time. The steps that remain is to secure cost-share partners and consultant with the appropriate background to effectively execute the tasks outlined above. At this time it is estimated that it would cost around **\$280,000**. The AFRP has Identified a maximum contribution of \$200,000 of FY 2000 funds.

It is also estimated that once a consultant is identified it will take up to two year for completion of a final Stanislaus River Corridor Physical Habitat Assessment and Restoration Plan.